

#4



ENTERED

OIPE

RAW SEQUENCE LISTING

DATE: 04/23/2002

PATENT APPLICATION: US/10/032,361

TIME: 09:38:41

Input Set : A:\1443025US1.txt

Output Set: N:\CRF3\04232002\J032361.raw

4 <110> APPLICANT: McGrath, Kevin
 6 <120> TITLE OF INVENTION: Peptide Activators of VEGF
 9 <130> FILE REFERENCE: 1443.025US1
 11 <140> CURRENT APPLICATION NUMBER: US 10/032,361
 12 <141> CURRENT FILING DATE: 2001-12-21
 14 <160> NUMBER OF SEQ ID NOS: 7
 16 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 18 <210> SEQ ID NO: 1
 19 <211> LENGTH: 826
 20 <212> TYPE: PRT
 21 <213> ORGANISM: Homo sapiens
 23 <400> SEQUENCE: 1
 24 Met Glu Gly Ala Gly Gly Ala Asn Asp Lys Lys Lys Ile Ser Ser Glu
 25 1 5 10 15
 26 Arg Arg Lys Glu Lys Ser Arg Asp Ala Arg Ser Arg Arg Ser Lys
 27 20 25 30
 28 Glu Ser Glu Val Phe Tyr Glu Leu Ala His Gln Leu Pro Leu Pro His
 29 35 40 45
 30 Asn Val Ser Ser His Leu Asp Lys Ala Ser Val Met Arg Leu Thr Ile
 31 50 55 60
 32 Ser Tyr Leu Arg Val Arg Lys Leu Leu Asp Ala Gly Asp Leu Asp Ile
 33 65 70 75 80
 34 Glu Asp Asp Met Lys Ala Gln Met Asn Cys Phe Tyr Leu Lys Ala Leu
 35 85 90 95
 36 Asp Gly Phe Val Met Val Leu Thr Asp Asp Gly Asp Met Ile Tyr Ile
 37 100 105 110
 38 Ser Asp Asn Val Asn Lys Tyr Met Gly Leu Thr Gln Phe Glu Leu Thr
 39 115 120 125
 40 Gly His Ser Val Phe Asp Phe Thr His Pro Cys Asp His Glu Glu Met
 41 130 135 140
 42 Arg Glu Met Leu Thr His Arg Asn Gly Leu Val Lys Lys Gly Lys Glu
 43 145 150 155 160
 44 Gln Asn Thr Gln Arg Ser Phe Phe Leu Arg Met Lys Cys Thr Leu Thr
 45 165 170 175
 46 Ser Arg Gly Arg Thr Met Asn Ile Lys Ser Ala Thr Trp Lys Val Leu
 47 180 185 190
 48 His Cys Thr Gly His Ile His Val Tyr Asp Thr Asn Ser Asn Gln Pro
 49 195 200 205
 50 Gln Cys Gly Tyr Lys Lys Pro Pro Met Thr Cys Leu Val Leu Ile Cys
 51 210 215 220
 52 Glu Pro Ile Pro His Pro Ser Asn Ile Glu Ile Pro Leu Asp Ser Lys
 53 225 230 235 240
 54 Thr Phe Leu Ser Arg His Ser Leu Asp Met Lys Phe Ser Tyr Cys Asp

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/032,361

DATE: 04/23/2002

TIME: 09:38:41

Input Set : A:\1443025US1.txt

Output Set: N:\CRF3\04232002\J032361.raw

```

55          245          250          255
56 Glu Arg Ile Thr Glu Leu Met Gly Tyr Glu Pro Glu Glu Leu Leu Gly
57          260          265          270
58 Arg Ser Ile Tyr Glu Tyr Tyr His Ala Leu Asp Ser Asp His Leu Thr
59          275          280          285
60 Lys Thr His His Asp Met Phe Thr Lys Gly Gln Val Thr Thr Gly Gln
61          290          295          300
62 Tyr Arg Met Leu Ala Lys Arg Gly Gly Tyr Val Trp Val Glu Thr Gln
63 305          310          315          320
64 Ala Thr Val Ile Tyr Asn Thr Lys Asn Ser Gln Pro Gln Cys Ile Val
65          325          330          335
66 Cys Val Asn Tyr Val Val Ser Gly Ile Ile Gln His Asp Leu Ile Phe
67          340          345          350
68 Ser Leu Gln Gln Thr Glu Cys Val Leu Lys Pro Val Glu Ser Ser Asp
69          355          360          365
70 Met Lys Met Thr Gln Leu Phe Thr Lys Val Glu Ser Glu Asp Thr Ser
71          370          375          380
72 Ser Leu Phe Asp Lys Leu Lys Lys Glu Pro Asp Ala Leu Thr Leu Leu
73 385          390          395          400
74 Ala Pro Ala Ala Gly Asp Thr Ile Ile Ser Leu Asp Phe Gly Ser Asn
75          405          410          415
76 Asp Thr Glu Thr Asp Asp Gln Gln Leu Glu Glu Val Pro Leu Tyr Asn
77          420          425          430
78 Asp Val Met Leu Pro Ser Pro Asn Glu Lys Leu Gln Asn Ile Asn Leu
79          435          440          445
80 Ala Met Ser Pro Leu Pro Thr Ala Glu Thr Pro Lys Pro Leu Arg Ser
81          450          455          460
82 Ser Ala Asp Pro Ala Leu Asn Gln Glu Val Ala Leu Lys Leu Glu Pro
83 465          470          475          480
84 Asn Pro Glu Ser Leu Glu Leu Ser Phe Thr Met Pro Gln Ile Gln Asp
85          485          490          495
86 Gln Thr Pro Ser Pro Ser Asp Gly Ser Thr Arg Gln Ser Ser Pro Glu
87          500          505          510
88 Pro Asn Ser Pro Ser Glu Tyr Cys Phe Tyr Val Asp Ser Asp Met Val
89          515          520          525
90 Asn Glu Phe Lys Leu Glu Leu Val Glu Lys Leu Phe Ala Glu Asp Thr
91          530          535          540
92 Glu Ala Lys Asn Pro Phe Ser Thr Gln Asp Thr Asp Leu Asp Leu Glu
93 545          550          555          560
94 Met Leu Ala Pro Tyr Ile Pro Met Asp Asp Asp Phe Gln Leu Arg Ser
95          565          570          575
96 Phe Asp Gln Leu Ser Pro Leu Glu Ser Ser Ser Ala Ser Pro Glu Ser
97          580          585          590
98 Ala Ser Pro Gln Ser Thr Val Thr Val Phe Gln Gln Thr Gln Ile Gln
99          595          600          605
100 Glu Pro Thr Ala Asn Ala Thr Thr Thr Thr Ala Thr Thr Asp Glu Leu
101          610          615          620
102 Lys Thr Val Thr Lys Asp Arg Met Glu Asp Ile Lys Ile Leu Ile Ala
103 625          630          635          640

```

RAW SEQUENCE LISTING

DATE: 04/23/2002

PATENT APPLICATION: US/10/032,361

TIME: 09:38:41

Input Set : A:\1443025US1.txt

Output Set: N:\CRF3\04232002\J032361.raw

```

104 Ser Pro Ser Pro Thr His Ile His Lys Glu Thr Thr Ser Ala Thr Ser
105                               645                               650                               655
106 Ser Pro Tyr Arg Asp Thr Gln Ser Arg Thr Ala Ser Pro Asn Arg Ala
107                               660                               665                               670
108 Gly Lys Gly Val Ile Glu Gln Thr Glu Lys Ser His Pro Arg Ser Pro
109                               675                               680                               685
110 Asn Val Leu Ser Val Ala Leu Ser Gln Arg Thr Thr Val Pro Glu Glu
111                               690                               695                               700
112 Glu Leu Asn Pro Lys Ile Leu Ala Leu Gln Asn Ala Gln Arg Lys Arg
113 705                               710                               715                               720
114 Lys Met Glu His Asp Gly Ser Leu Phe Gln Ala Val Gly Ile Gly Thr
115                               725                               730                               735
116 Leu Leu Gln Gln Pro Asp Asp His Ala Ala Thr Thr Ser Leu Ser Trp
117                               740                               745                               750
118 Lys Arg Val Lys Gly Cys Lys Ser Ser Glu Gln Asn Gly Met Glu Gln
119                               755                               760                               765
120 Lys Thr Ile Ile Leu Ile Pro Ser Asp Leu Ala Cys Arg Leu Leu Gly
121                               770                               775                               780
122 Gln Ser Met Asp Glu Ser Gly Leu Pro Gln Leu Thr Ser Tyr Asp Cys
123 785                               790                               795                               800
124 Glu Val Asn Ala Pro Ile Gln Gly Ser Arg Asn Leu Leu Gln Gly Glu
125                               805                               810                               815
126 Glu Leu Leu Arg Ala Leu Asp Gln Val Asn
127                               820                               825
129 <210> SEQ ID NO: 2
130 <211> LENGTH: 735
131 <212> TYPE: PRT
132 <213> ORGANISM: Homo sapiens
134 <400> SEQUENCE: 2
135 Met Glu Gly Ala Gly Gly Ala Asn Asp Lys Lys Lys Ile Ser Ser Glu
136 1 5 10 15
137 Arg Arg Lys Glu Lys Ser Arg Asp Ala Ala Arg Ser Arg Arg Ser Lys
138 20 25 30
139 Glu Ser Glu Val Phe Tyr Glu Leu Ala His Gln Leu Pro Leu Pro His
140 35 40 45
141 Asn Val Ser Ser His Leu Asp Lys Ala Ser Val Met Arg Leu Thr Ile
142 50 55 60
143 Ser Tyr Leu Arg Val Arg Lys Leu Leu Asp Ala Gly Asp Leu Asp Ile
144 65 70 75 80
145 Glu Asp Asp Met Lys Ala Gln Met Asn Cys Phe Tyr Leu Lys Ala Leu
146 85 90 95
147 Asp Gly Phe Val Met Val Leu Thr Asp Asp Gly Asp Met Ile Tyr Ile
148 100 105 110
149 Ser Asp Asn Val Asn Lys Tyr Met Gly Leu Thr Gln Phe Glu Leu Thr
150 115 120 125
151 Gly His Ser Val Phe Asp Phe Thr His Pro Cys Asp His Glu Glu Met
152 130 135 140
153 Arg Glu Met Leu Thr His Arg Asn Gly Leu Val Lys Lys Gly Lys Glu
154 145 150 155 160

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/032,361

DATE: 04/23/2002

TIME: 09:38:41

Input Set : A:\1443025US1.txt

Output Set: N:\CRF3\04232002\J032361.raw

```

155 Gln Asn Thr Gln Arg Ser Phe Phe Leu Arg Met Lys Cys Thr Leu Thr
156                               165                               170                               175
157 Ser Arg Gly Arg Thr Met Asn Ile Lys Ser Ala Thr Trp Lys Val Leu
158                               180                               185                               190
159 His Cys Thr Gly His Ile His Val Tyr Asp Thr Asn Ser Asn Gln Pro
160                               195                               200                               205
161 Gln Cys Gly Tyr Lys Lys Pro Pro Met Thr Cys Leu Val Leu Ile Cys
162                               210                               215                               220
163 Glu Pro Ile Pro His Pro Ser Asn Ile Glu Ile Pro Leu Asp Ser Lys
164 225                               230                               235                               240
165 Thr Phe Leu Ser Arg His Ser Leu Asp Met Lys Phe Ser Tyr Cys Asp
166                               245                               250                               255
167 Glu Arg Ile Thr Glu Leu Met Gly Tyr Glu Pro Glu Glu Leu Leu Gly
168                               260                               265                               270
169 Arg Ser Ile Tyr Glu Tyr Tyr His Ala Leu Asp Ser Asp His Leu Thr
170                               275                               280                               285
171 Lys Thr His His Asp Met Phe Thr Lys Gly Gln Val Thr Thr Gly Gln
172                               290                               295                               300
173 Tyr Arg Met Leu Ala Lys Arg Gly Gly Tyr Val Trp Val Glu Thr Gln
174 305                               310                               315                               320
175 Ala Thr Val Ile Tyr Asn Thr Lys Asn Ser Gln Pro Gln Cys Ile Val
176                               325                               330                               335
177 Cys Val Asn Tyr Val Val Ser Gly Ile Ile Gln His Asp Leu Ile Phe
178                               340                               345                               350
179 Ser Leu Gln Gln Thr Glu Cys Val Leu Lys Pro Val Glu Ser Ser Asp
180                               355                               360                               365
181 Met Lys Met Thr Gln Leu Phe Thr Lys Val Glu Ser Glu Asp Thr Ser
182                               370                               375                               380
183 Ser Leu Phe Asp Lys Leu Lys Lys Glu Pro Asp Ala Leu Thr Leu Leu
184 385                               390                               395                               400
185 Ala Pro Ala Ala Gly Asp Thr Ile Ile Ser Leu Asp Phe Gly Ser Asn
186                               405                               410                               415
187 Asp Thr Glu Thr Asp Asp Gln Gln Leu Glu Glu Val Pro Leu Tyr Asn
188                               420                               425                               430
189 Asp Val Met Leu Pro Ser Pro Asn Glu Lys Leu Gln Asn Ile Asn Leu
190                               435                               440                               445
191 Ala Met Ser Pro Leu Pro Thr Ala Glu Thr Pro Lys Pro Leu Arg Ser
192                               450                               455                               460
193 Ser Ala Asp Pro Ala Leu Asn Gln Glu Val Ala Leu Lys Leu Glu Pro
194 465                               470                               475                               480
195 Asn Pro Glu Ser Leu Glu Leu Ser Phe Thr Met Pro Gln Ile Gln Asp
196                               485                               490                               495
197 Gln Thr Pro Ser Pro Ser Asp Gly Ser Thr Arg Gln Ser Ser Pro Glu
198                               500                               505                               510
199 Pro Asn Ser Pro Ser Glu Tyr Cys Phe Tyr Val Asp Ser Asp Met Val
200                               515                               520                               525
201 Asn Glu Phe Lys Leu Glu Leu Val Glu Lys Leu Phe Ala Glu Asp Thr
202                               530                               535                               540
203 Glu Ala Lys Asn Pro Phe Ser Thr Gln Asp Thr Asp Leu Asp Leu Glu

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/032,361

DATE: 04/23/2002

TIME: 09:38:41

Input Set : A:\1443025US1.txt

Output Set: N:\CRF3\04232002\J032361.raw

```

204 545          550          555          560
205 Met Leu Ala Pro Tyr Ile Pro Met Asp Asp Asp Phe Gln Leu Arg Ser
206          565          570          575
207 Phe Asp Gln Leu Ser Pro Leu Glu Ser Ser Ser Ala Ser Pro Glu Ser
208          580          585          590
209 Ala Ser Pro Gln Ser Thr Val Thr Val Phe Gln Gln Thr Gln Ile Gln
210          595          600          605
211 Glu Pro Thr Ala Asn Ala Thr Thr Thr Ala Thr Thr Asp Glu Leu
212          610          615          620
213 Lys Thr Val Thr Lys Asp Arg Met Glu Asp Ile Lys Ile Leu Ile Ala
214 625          630          635          640
215 Ser Pro Ser Pro Thr His Ile His Lys Glu Thr Thr Ser Ala Thr Ser
216          645          650          655
217 Ser Pro Tyr Arg Asp Thr Gln Ser Arg Thr Ala Ser Pro Asn Arg Ala
218          660          665          670
219 Gly Lys Gly Val Ile Glu Gln Thr Glu Lys Ser His Pro Arg Ser Pro
220          675          680          685
221 Asn Val Leu Ser Val Ala Leu Ser Gln Arg Thr Thr Val Pro Glu Glu
222          690          695          700
223 Glu Leu Asn Pro Lys Ile Leu Ala Leu Gln Asn Ala Gln Arg Lys Arg
224 705          710          715          720
225 Lys Met Glu His Asp Gly Ser Leu Phe Gln Ala Val Gly Ile Ile
226          725          730          735
228 <210> SEQ ID NO: 3
229 <211> LENGTH: 789
230 <212> TYPE: PRT
231 <213> ORGANISM: Homo sapiens
233 <400> SEQUENCE: 3
234 Met Ala Ala Thr Thr Ala Asn Pro Glu Met Thr Ser Asp Val Pro Ser
235 1          5          10          15
236 Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
237          20          25          30
238 Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Leu Asp
239          35          40          45
240 Phe Asp Asp Asp Gly Glu Gly Asn Ser Lys Phe Leu Arg Cys Asp Asp
241          50          55          60
242 Asp Gln Met Ser Asn Asp Lys Glu Arg Phe Ala Arg Ser Asp Asp Glu
243 65          70          75          80
244 Gln Ser Ser Ala Asp Lys Glu Arg Leu Ala Arg Glu Asn His Ser Glu
245          85          90          95
246 Ile Glu Arg Arg Arg Arg Asn Lys Met Thr Ala Tyr Ile Thr Glu Leu
247          100          105          110
248 Ser Asp Met Val Pro Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys
249          115          120          125
250 Leu Thr Ile Leu Arg Met Ala Val Ser His Met Lys Ser Leu Arg Gly
251          130          135          140
252 Thr Gly Asn Thr Ser Thr Asp Gly Ser Tyr Lys Pro Ser Phe Leu Thr
253 145          150          155          160
254 Asp Gln Glu Leu Lys His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/032,361

DATE: 04/23/2002

TIME: 09:38:42

Input Set : A:\1443025US1.txt

Output Set: N:\CRF3\04232002\J032361.raw

L:346 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
L:360 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5
L:392 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7